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The Horse in Sculpture.
Mexican Cemeteries.
Papyri and Portraits found in the Faiyum.
Buttress and Pilaster.
Communications.
Notes and Clippings.
Trade Surveys.

ILLUSTRATIONS.

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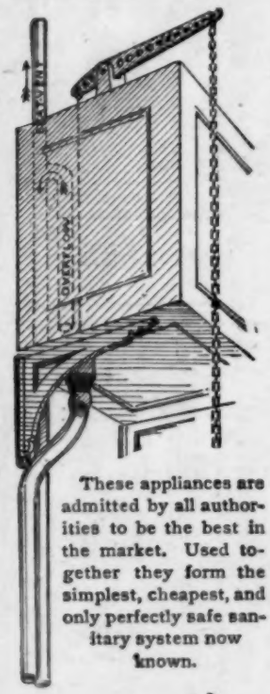

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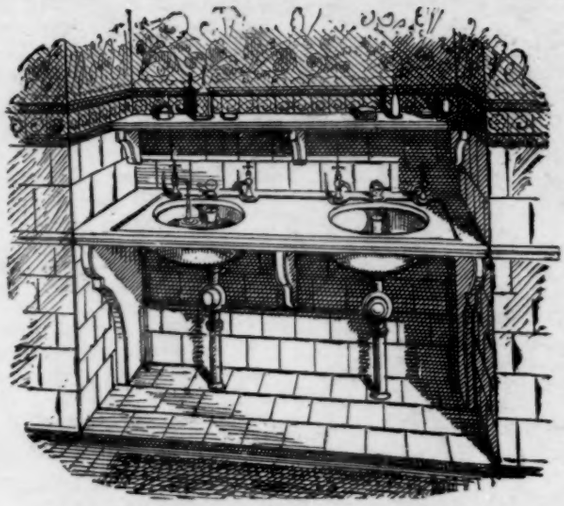

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WE have this week to record the deaths of two architects, one belonging to the younger generation, while the other was perhaps the oldest practitioner in the country. The younger man, who died in the latter part of last month, was Mr. Henry Parfitt, of Brooklyn, N. Y. Mr. Parfitt was an Englishman, one of three brothers, who came to this country about fifteen years ago, and by their talent and careful administration of their business built up a large practice. Mr. Henry Parfitt was at first the designer of the firm, but on the arrival from England of his younger brother this part of the work was shared between them, and to the skill of one or both the brothers Brooklyn owes a considerable number of its finest buildings. For some reason, the practice of architecture seems to be particularly trying to young men, and an unusually large proportion of members of our profession succumb to the toil and anxiety through which they must gain a foothold in the world; and like so many others, Mr. Parfitt, just as his position and reputation had become firmly established, fell a victim to the attack of organic disease, which his brave resistance could not overcome. The older architect of whose death we have to speak was the venerable Jonathan Preston, of Boston, who died recently in that city, at the age of nearly eighty-seven years. Mr. Preston was born in Beverly, in 1801, and practised his profession in Boston for more than half a century, erecting many of the principal buildings of the period preceding the great fire. For the last fifteen years or so he had been out of active practice, but until within a short time he retained his desk in the business quarter of the city, and was constantly consulted on building matters by his old friends, as well as by official persons. His most successful work in Boston is, perhaps, the pair of buildings erected for the Boston Society of Natural History and the Massachusetts Institute of Technology, which are treated in the classic style considered proper for such buildings at the time they were designed, but show dignity and elegance of proportion, with an effectiveness not often combined with classic design. As a citizen Mr. Preston was greatly esteemed for his energy as well as his perfect integrity, and was many times elected to municipal and State offices.

ANOTHER recent death of importance is that of Mr. James Jackson Jarves, which occurred at Tarasp, in Switzerland, last week. Mr. Jarves was born in Boston, in 1818, and always retained a strong affection for the home of his youth, although ill health compelled him to live away from it for fifty years. His first foreign residence was in the Sandwich Islands, where he lived ten years, occupying himself by publishing and editing a newspaper, which acquired great influence in the country. Soon after his return to the United States, in 1849, he received a signal proof of the appreciation which his work had gained for him with the Hawaiian Government by an appointment as Commissioner from the King of Hawaii to the Governments of the United States, France and Great Britain, with power to negotiate treaties with all those powers. His duties as the holder of this appointment took him to Europe, where he found so much to interest him that most of the remainder of his life was spent there. Like a true American, however, he viewed the life which surrounded him rather as an object to be studied by the light of the maxims in which he had been trained than as something by which those maxims could be superseded; and his two books, "*Parisian Sights and French Principles*," and "*Italian Sights and Papal Principles, seen through American Spectacles*," are particularly pleasant reading on this account. On taking up his residence in Italy in 1852 or 1853, he became, like most amateurs of that time, an enthusiastic collector of the works of art of various kinds then so abundant there. With the help of assiduous study of the best examples, and untiring industry in searching for authentic, but little-known specimens, he succeeded in forming a most beautiful and interesting collection of works by the old masters, including a series of pre-Raphaelite paintings which would do credit to many a pretentious foreign museum. Not being rich enough to keep the collection for himself, it was sold here, and unfortunately scattered, the larger portion of the pictures, however, falling into the hands of the authorities of Yale College, who made of them the nucleus of the celebrated collection now belonging to the college. Continuing his researches, he added to his treasures specimens of antique sculpture and examples of the minor arts, which from time to time have found their way here, among the most noted being the beautiful Etruscan sarcophagi now in the Museum of Fine Arts in Boston, the collection of Venetian glass presented by him to the Metropolitan Museum in New York, and a part of the Hollenden collection of pictures and sculptures at Cleveland. As a critic, Mr. Jarves was intelligent and zealous, but critics of art have but a thankless office in this country, and he will be remembered longest for his clever and earnest books of travel, and for the inestimable service which he has rendered his native country in collecting for it treasures, while the opportunity remained, whose value will be every year better understood.

A GREAT lockout has just occurred in the iron mills, and about one hundred thousand men are out of employment. According to the newspapers, the lockout seems to have been a concerted plan of the employers' association, and to have been purposely arranged to take the men by surprise. At a certain time in each year, it has been customary for the representatives of the masters and men to meet and agree upon a scale of prices for the year. This season, as we understand it, the scale of last year was again presented by the men, who were astonished at being told that it was rejected, and that a scale had been prepared by the manufacturers, which must be the basis of negotiations. The men, who seem to have behaved very quietly and well, took the manufacturers' scale into consideration, and after a few days' deliberation decided not to sign it. The manufacturers then informed them that if it was not signed within three days, all the mills of the association would shut down; and at the appointed time, neither side having shown any disposition to alter its mind, the mill doors were locked. Since then, individual advances have been made on both sides, and will, we trust, continue until business is generally resumed. We cannot consider that the attitude of the masters is particularly creditable. If one of their influential customers should walk into their office, ask the price of iron, and, on being informed, offer them a price ten per cent lower, and then stalk out again, remarking that unless his offer was accepted within three days he would have their business destroyed, and themselves and their families turned penniless into the streets, they would probably consider themselves very harshly treated; yet this is exactly the way in which they are treating their men. It is certainly the prerogative of the man who has anything to sell to say first what price he asks for it. If his customer does not wish to pay so much, he says so, and the seller then decides whether he will make any reduction. To call the men's action a manifestation of "dictation" on the part of the persons who have their year's labor to sell, and to refuse to listen to any compromise, seems to us like an attempt to get up a silly quarrel about nothing, and we should not be sorry to see the manufacturers defeated year after year, until they can use the great power of their association with moderation and common-sense, instead of flying off into violent — we might almost say murderous demonstrations at every fancied slight to their dignity. Fortunately, many individual masters and crews of workmen have quietly settled the matter between themselves, and we

hope that others will follow. In some cases the manufacturers have signed the old scale for another year; in others the men have accepted a reduction; and the largest firm in Pittsburg, that of Oliver Brothers and Phillips, which employed more than three thousand men, has agreed upon a compromise, each side making some concessions. It is probable that similar concessions would have been accepted by the conference, and the whole trouble averted, if any one had ventured to propose them.

THE Prince Consort of England once said, "If you send for an architect to undertake some unusual work, he debates, hesitates, trifles; if you send for an engineer, he does it." On this text the *British Architect* founds an excellent little sermon on the value to architects of extensive and varied capacity. It is perhaps the misfortune of the profession that its members must be at once artists, business men, and scientific experts, and that they cannot choose to be either more than the others without great injury to their usefulness and success. There is a common notion among architectural assistants, that to be an artist is a much superior thing to being a good business man, or a skilful constructor; and that it is beyond human capacity to excel in design and in anything else at the same time. The conclusion which they draw from this convenient theory is that if they can learn to make picturesque designs and show them by taking sketches, they need waste no time in studying the dry details of quantities and prices, or in compelling their brains to grapple with mathematical problems; and, as a consequence, they degenerate into mere clever draughtsmen, drifting, usually at a good salary, from office to office, but becoming constantly less and less fitted to practice successfully on their own account. The man who would avoid this tendency should never forget, in the pleasure which he takes in exercising a well-earned facility in design, the importance of making constant efforts to keep himself familiar with details of construction, prices and specifications. Let him imagine himself a young lawyer or merchant, with a limited income, and a family dependent upon him, who has laid by money enough to build himself a house, and then reflect whether he would be likely to apply for designs and supervision to the dashing A, whose captivating sketches, made off-hand with a burnt match, are hardly more the talk of the clubs than his reckless Bohemianism and financial incapacity, or to the industrious, sober, and well-trained B, whose sketches have the advantage over A's of looking something like the buildings constructed from them, and who is known to respect conscientiously his employer's wishes in regard to expense. The young architect must bear in mind that his first clients will generally be his personal friends, poor but hopeful, like himself, and that defective specifications, or ignorant supervision, or impossible plans, may bring debt and bitter disappointment to them, and to him an unfavorable reputation from which he will suffer through his whole professional life. There is nothing so very difficult about any of the circle of sciences which constitute the architect's equipment. The *British Architect* tells of a distinguished architect and masterly designer, who, probably through injudicious training, or mischievous associations during his life as a draughtsman, began his career with an unconcealed loathing for what he called the "office pettifoggery" of specifications, supervision, quantities and estimates. He was intelligent enough, however, to see the necessity of conquering these, and devoted himself to the task, until he became as thorough an adept in these as in the artistic details of his work, and now, as the *British Architect* says, "his bills of extras are magnificently short; he is ready for grappling with every contingency which ever arises, big or small; and, mightiest of all proofs of an architect's success, his clients come to him a second time."

THE *Providence Journal* publishes an article in regard to the action of the House of Representatives about the Congressional Library, which condenses into a small compass the facts in regard to the abuses which have been going on in connection with it. As those who read the newspapers know, the work on the library has been carried on, like that on most other public buildings, by a huge corps of salaried officials. Instead of compensating the architect by a percentage on the cost, as is done in all other civilized countries, or, let us say, in all countries where skill and talent are considered to be worth paying for, the ignorant penuriousness of the Government, fearful of offering anything like encouragement to the "aristocracy of edication," about which we have known a voter complain, confers upon the architect of its principal building a salary about equal to that of a senator's cook, and congratulates itself upon the business talent which can secure the best architect applying for the commission at about one-tenth the compensation which private individuals would pay him for the same work and responsibility. Extending this wise system still further, all the persons who, in the opinion of the Government, will be needed to provide for the due designing and supervision, as well as the construction of the building, are retained at salaries usually inversely proportioned to the value of their services. The Government being perfectly ignorant of the size and character of the force of assistants employed by an architect, or needed for carrying out construction, and unwilling to follow the custom of private persons and other official bodies, by giving its architect a proper compensation, and allowing him to choose and pay his own assistants, seems to have added to the architectural corps of the library any one who wanted a place of some sort, and had influential support, and we find, besides the architect-in-chief, an "assistant architect," an "expert in heating and ventilating," an "expert in iron construction," an "accountant," a "computer," four draughtsmen, and other aids to the architect in the fulfilment of his duties; while, as general attachés to the work of construction are, or have been, employed a foreman, assistant foreman, time-keeper, inspector of drainage, carpenters, and water-boys, besides five men and four women who draw salaries as persons "in charge of horses and carts." It is impossible to suspect the Government Commissioners of any unfaithfulness to their charge; on the contrary, it seems to have been rather their excess of zeal in making all appointments themselves, without any comprehension of what was really needed, yet without being willing to trust any one's knowledge as being greater than their own, which has, as the official report informs us, led to the expenditure of nearly eighty-two thousand dollars in salaries in two years, besides an additional sum for wages of laborers, which brings the total up to about one hundred thousand dollars, with the net result of digging a large hole in the ground, and building a board fence around it. The *Providence Journal* says that "the House has not put a check to this sort of business a moment too soon." We trust that its action may result in "checking" "this sort of business," which has been going on throughout the whole field of Government work for many years, but, so far as we can see, and as experience indicates, it seems to be simply intended to turn out indignantly one set of salaried superfluities, and put in another, to be in turn unscrupulously ejected later; and, in our opinion, if the people of the country wish to see the public building business relieved of the huge burden of salaried hangers-on, of inspectors who do not inspect, deputy inspectors to watch the others, "experts," "computers," and so on, it must consult, not with Congressmen who have constituents to please with places, but with the citizens who have spent their lives in learning how to conduct building operations properly and economically, and have a right to be allowed to serve the public on the same terms, and under the same responsibility, as their private clients. There is not a single argument, so far as we can see, to be urged in favor of the present system of Government building. With respect to the architectural work upon them, which is the most important part, it simply secures very imperfect service at a very high price. To take the case of the Congressional Library, the architect-in-chief, at a salary of four thousand dollars a year, is "assisted" by a large number of independent officials, and has his office rent, and the cost of keeping a carriage, paid out of the Treasury, at an expense, probably, of at least twenty-five thousand dollars more, making twenty-nine or thirty thousand dollars a year expended upon the architect's office, but not on him. If he were paid by commission in the usual way, his annual fees, averaged over the period which would generally be consumed in erecting such a building, would be much less than this, and he would not only pay his own office rent, coachman's wages, and salaries of draughtsmen, "computers," and "experts," but would be much better served by them, and would make a decent income out of what was left. This example is one of many, and, as has been often shown, the country, instead of spending enormous sums in having inferior men, at meagre wages, design mean and ugly buildings for it, may, if it chooses to insist upon it, have, at a less price, all its public work the best and most beautiful that the ablest architect can produce. If it wishes to bring about this change, the present occasion would be a favorable one for making its desire known.

THE HORSE IN SCULPTURE.[1]

An old Florentine Sketch.

NEXT to man, the horse has been the most frequent subject in sculpture, perhaps it may be said in all arts, but in sculpture more especially, as the horse is the moving pedestal for the man, on which he may be seen to as great advantage perhaps as on his own feet. To "witch the world with noble horsemanship" has been a favorite delight with the young, the active, and the fearless in all times and places when equitation was possible, and some tribes and nations, not only in the old world but also in the new, may be said almost to live on horseback. I am not aware whether the evolution theorists have attempted to indicate the time when horse and man first became acquainted, but assuredly it appears to have been prehistoric. The horse must have been the man's first friend, we must think. The dog may have come next, who is superior in intellect to the larger animal, but is not so directly useful. The astride position of a well-made man exactly fits on a well-made horse, just as if they were adjusted for each other. And no doubt so they were, for such a perfect coincidence of relative forms could not have taken place fortuitously. We need not marvel therefore at the frequent association of them in art, more especially in sculpture, an art which is so peculiarly and specifically that of form. The first mention of this noble quadruped, who lends the speed and strength of his four legs to man who has but two, which occurs in the Holy Scriptures, speaks of him as already in habitual use for riding by the human race. "Dan shall be a serpent by the way, an adder in the path, that biteth the horse heels, so that his rider shall fall backward." — Genesis 49 : 17. The second notice is in Exodus 15 : 21. "The horse and his rider hath he thrown into the sea." And here again they are associated as the lord and the minion, the master and his servant.

With the exception however of these two passages, there is not much mention of horses before the time of Solomon, who, notwithstanding this, had an extensive stud of them. He had forty thousand stalls of horses for his chariots, and twelve thousand horsemen distributed in his fortified places; but it appears that he had his horses from Egypt, as the King of the Hebrews seems to have been forbidden to breed them. Before this, however, David, having won a great battle over Hadadezer, King of Zobar, took seventeen hundred horses, and had all of them belonging to the chariots of war lamed, reserving only sufficient for a hundred chariots. The passage in the 39th chapter of Job, verses from 19 to 25, descriptive of the war-horse, is so fine, that, although well-known, the introduction of it may be pardonable, as affording an epic glorification of the creature. "Hast thou given the horse strength? Hast thou clothed his neck with thunder? Canst thou make him afraid as a grasshopper? The glory of his nostrils is terrible. He paweth in the valley, and rejoiceth in his strength: he goeth on to meet the armed men. He mocketh at fear, and is not affrighted; neither turneth he back from the sword. The quiver rattleth against him, the glittering spear and the shield. He swalloweth the ground with fierceness and rage: neither believeth he that it is the sound of the trumpet. He saith among the trumpets, Ha, Ha; and he smelleth the battle afar off, the thunder of the captains and the shouting." What a grand image of a horse this presents! of a charger trained by man to bear him into the fight, with perhaps an *arrière pensée* on the part of the rider of his being able to take advantage of his superior fleetness to carry him out of it, in the event of defeat. But nought of this discretion exists in this courser of Job's, his only inspirations are advance and triumph. The force and fierceness of a horse when thoroughly awakened are well-known, and the onslaught of a lion or a bear on him has been known to be concluded by the jaw of the assailant being broken by the horse's violent hind-hoofs. Might not such a courser as this of the Book of the Patriarch of Uz form a fine subject for a painter or a sculptor?

From this steed of Holy Writ we may turn to him of Classic story, Pegasus, who was so fleet that he was fabled to have wings, the famous Greek prototype of the "Flying Childers" of the English turf. What a career he had and what a record of actions in which he took part! He was born according to Hesiod, near "the source of the ocean," wherever that may have been. He was broken in by Neptune, and put through his paces by Minerva. He was lent to Bellerophon to conquer the Chimæra, and also to Perseus to vanquish the sea-monster who was about to devour Andromeda. He was a fortunate horse in every respect, and was a favorite with the Muses on Parnassus, where no doubt he was well stalled on the mountain top; and he repaid his keep and entertainment when staying on the neighboring height of Helicon, another country-seat of the divine Nine, by striking the rock with his foot, and raising the perennial fountain of Hippocrene, thus named after him, the Horse-fountain, which has been the spring of poetry ever since. Well worthy therefore does he appear to be of his annals in the pages of literature. He does not, however, seem to have been frequently a subject of Art; the reason for which probably may be that he is more fitted for depiction by himself, than with a rider on him who would be apt to be concealed by his wings rising from his shoulders, a matter which would not trouble the poet, and thus Ovid and others have made good use of him as a courser for their heroes. However, by himself, as a wild steed, his idea presents a very superior image, and in sculpture, stamping his foot on the ground, might form a classic and appropriate emblem and embellishment for the springing forth of a stream or fountain in some ornamental grounds where fancy is the leading feature. On the whole, perhaps, he is the most celebrated horse on record, his wings being, of course, only a mythical addition to indicate his swiftness.

There are, however, in ancient story many other mentions of famous horses, among whom not the least renowned was the favorite charger of Alexander, who was named Bucephalus from his head being somewhat short and thick, like that of a bull. He was refractory and untameable in the hands of others, but so meek and subservient to his master that it is said that he used to kneel down for him to mount. He bore him in various of his battles in Asia, in one of which he met his death at the advanced age, for a horse, of thirty years. As a token of regard, and in gratitude for his services, the great Macedonian built over his remains a city in India near the Hydaspes, which he called after him Bucephala. In India there have been also several other memorials in the way of records and tombs erected by the great people and invaders of that country over the remains of favorite steeds that had carried them, some of which are still in existence. Doubtless, however, from their eminent use in war, the Macedonian regal hero was the most remarkable for his estimation of horses and of their images in sculpture, as in respect of the twenty-five statues which he caused to be made of his chief officers, under the superintendence of his favorite sculptor Lysippus. They were all equestrian, but alas not one of them is in existence.

If we may judge by the remains of horses that we have in the Parthenaic sculptures which were executed about a hundred years previously, we have reason to suppose that those of Lysippus were very fine, for he was an admirable sculptor, especially in respect to the grace of proportion with which he endowed his works. The most perfect examples in Greek art which we now possess are in the cavalcade of the frieze of the Parthenon in the British Museum. They represent a small breed compared with our present English charger, and have their manes hogged, but they are admirable in the justness of their anatomy and their beauty of form. The sculptors of these did not stray into the anomalies of structure which are to be seen in some of the horses of mediæval art. To what degree the ancient Greeks studied anatomy by means of actual dissection seems to be a doubtful point, and it has been suggested that a great prejudice existed against it with regard to the human race, which, however, could not have applied to animal forms. However this may have been, the anatomical justice and precision of the Phidian School, displayed in their sculptures both of men and horses, is remarkable. The structure of their horses is as perfect as that of their human beings.

In later mediæval times, judging from various of the representations of horses of that period, comparative anatomy was not so well comprehended as it is now; a relic of which may be recognized in our present name for the knee of the horse, which in relation to, and in consonance with the anatomy of man, would be called the wrist, it being in the fore-quarter, and formed of a closely compacted company of bones like the wrists of our own arm; while in like manner the true knee-joint of the horse is the stifle-joint of the hind leg, where the true knee-cap, or patella, exists, which in oxen is called by butchers in England the cramp-bone. This relation and similarity of bony structure between the man and the horse, which indeed pervades in degree that of all vertebrated animals may be further illustrated by causing the skeleton of a horse to be placed erect on his hind legs by the side of that of a man, or, on the other hand, the skeleton of a man on all fours, resting on the tips of its toes and fingers, beside that of a horse in his usual standing position, when the identity of the relative general principle of structure is exemplified at once. There is nothing in the least new in this statement of fact, although uninstructed people are apt to overlook it. Several of the mediæval artists appear also to have overlooked it. The ancient Greeks, however, were keener-sighted and more logical. There is no such discrepancy or short-coming in their representations. They appear to have at once discerned that the true theory of structure of form in a horse was, at least in its principal facts, closely analogous to that of man, and the only shade of novelty that I would venture to submit as such, is the probable reason why they so readily arrived at this conclusion.

The Greeks, as we know, regarded the human form as the most perfect thing in nature, and so far as they could under that image represented everything about them, and portrayed even their mountains, woods and rivers under the likeness of human beings. They incarnated even the powers of air, sea and infernal regions under the semblance of man, and under the same influence of thus looking on his form as the acme of nature, they were led to seek for the same theory of structure as his, in whatever animal they undertook to represent. Sentiment is apt to mislead people, but in this case it conducted them to a logical fact, and shielded them from errors into which some other artists have fallen. The perfection of the horses in the Parthenaic frieze is an evidence of the comprehension of the true theory of their structure. Whether their being somewhat small arose from the breed then in use being so, or from the artistic purposes of their position and relative composition, may

[1] A paper, by an English sculptor, introductory to the papers on "Equestrian Monuments."

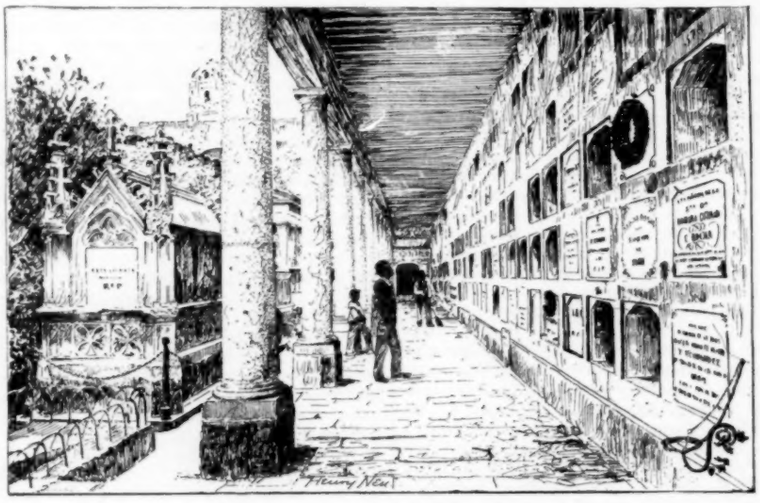
not perhaps be definitively determined. At all events they are excellent in form and action. We possess, unfortunately, no horses of this period as statues, or in the round, for the ancient horses on the Monte Cavallo do not appear to have an undoubted pedigree. And in this respect we have but the horse's heads from the tympanum of the same temple to supplement the forms presented in the frieze, to indicate the sculptural type of the horse of that time adopted by the Greeks. It is scarcely probable, however, that they had but one type, as they so distinctly varied the characters of their statues of human form — as in their representations of Jupiter, Apollo, Hercules and Bacchus. Probably, however, the breeds were not so distinct as at the present time when the needs of varied civilization have diversified them so much, as in the hunter, the race-horse, the dray-horse and the Shetland pony. The war-charger was no doubt their most favored exemplar, as in the case of the twenty-five equestrian statues made for Alexander.

The sculptor of these, Lysippus, was famed for the elegance of his works and a saying of his is recorded, that he sought to represent man, not as he is, but as he should be. Thus, we may infer that he sought a similar quality in his horses, and the coincidence of their theory of structure having been fully recognized long before his time, he may be assumed to have gained grace in the horse by means analogous to those by which he had been successful in man.

The Greek sculptors all made the heads of their statues somewhat smaller in reference to the rest of the figure than is found in real nature, especially in respect to the features, and this proportion has been accepted ever since as being essential to beauty in a statue. If he adopted a corresponding treatment in his horses, Arabia was not so far off but that he may have readily obtained his type from thence. In the Arab horse, although the brow is broad and ample, the muzzle is small and delicate, which adds eminently to the beauty of the creature. And further may be submitted the question, what is the good of a great head to a horse? It requires a stronger and thicker neck to support it, and this large head and neck is so much the more for the fore-quarters to sustain. On the other hand, if the head be light, the crest may continue high and well set back, but the neck may also be light and somewhat thin across, with advantage. When the horse has a rider on him, as in an equestrian statue, in the front view the horse's head is nearer to the spectator than that of the rider, and is thus the more apt to interfere with it, if it be large. Thus a degree of comparative lightness in these parts not only conduces to the grace of the horse, but also to the satisfactory effect of an equestrian statue.

In a man a wide wrist is an essential factor of strength, and so also it is in the horse in the corresponding joint, which we call the knee. In both cases it should be wide and flat, so as to gift it with endurance as well as force, as also it is the joint at which the horse usually first breaks down. In respect to the barrel, it should be wide and ample, with the withers well set back, and the shoulders sloping, and the chest deep if not wide, so as to afford ample room for the lungs of the horse; which are large, and take in some eight or ten times as much air as those of a man, and therefore, also, although the muzzle may be delicate the nostrils which greatly supply and free them in inhalation and expiration should be large and ample. In these short notes every point of the horse cannot be touched on, and therefore I would conclude them by only a general remark in respect to the hind-quarters, which should be strong, and long, so as to be well bent without raising the rear too high, and not straight-up-and-down as in some ponies, as it must be held in mind that it is from the hind-quarters that nearly all the propulsive force of the animal is derived, which the front legs comparatively only regulate. The above considerations are some of those which attach to the sculptor's art in the representation of a horse, separate and apart by himself, or when he becomes the pedestal of a hero in an equestrian statue.

J. B.



Panteon de San Fernando, Mexico.

When is a Church a Church? — Bishop Loughlin of Brooklyn has begun a suit in the Brooklyn City Court to restrain the city from collecting $600, levied upon the property of the Church of St. Augustine, in Sixth Avenue, now in course of construction. The Bishop claims that it is already entitled to exemption from taxation under the church clause. The city authorities claim that it is not exempt until the edifice has been completed. — *N. Y. Commercial Advertiser.*

MEXICAN BURIAL PLACES.

Tomb of President Comonfort in the Panteon de San Fernando, Mexico.

In connection with the attention which the *American Architect* is giving this year to American monuments, and the marked and unmarked burial places of some of the heroes of American history, a brief paper upon Mexican burying-grounds may be interesting to the reader. It cannot be claimed, however, that most of the cities of the dead scattered throughout the sister republic would be found fruitful in suggestions to the architect, or to those having the care of cemeteries in our country, save in one respect, that is "how *not* to do it." One of the things to shock the visitor in Mexico is the prevalence of customs regarding the disposal of the dead, totally at variance with what one would expect to find in a Roman Catholic country, differing widely from the customs of the United States, and by no means comparing favorably with the latter.

During my sojourn in Mexico I was greatly surprised to find that there were no old tombs there. It was very natural for me to look about the old churches in such a country as Mexico for historic relics of that character, but I looked in vain. I never saw but one tomb belonging to the eighteenth century: that was the tomb of Antonio Maria de Bucareli who was Viceroy from 1771 to 1779, and whose burial place in the Collegiate Church of Guadalupe is marked by a bronze tablet in the floor containing a long inscription. I found perhaps half a dozen tombs belonging to the early half of the present century, and these were scattered throughout the country, in churches, not in burying-grounds. This is easily explained as I found when I began to inquire into the reason of things. It is only recently that the custom of providing a permanent burial place for the dead has come up in Mexico. It is a right obtained by purchase, and when so obtained it is expressed upon the tomb. That is the meaning of the words *in perpetuo* clearly inscribed upon the tombs of the wealthier classes in some of the cemeteries of Mexico. The occupants of those tombs are to rest undisturbed. All others are transient lodgers only. The time allotted to them varies according to the price paid. For the very poor it is very brief. I once saw an inscription upon a tomb in a large cemetery in the suburbs of the capital, which read as if a sarcasm upon this custom were intended:

"HERE LIES BURIED, FOR TEN (10) YEARS, THE BODY OF ——."

What becomes of bodies when the leases of their tombs expires, I have only heard through vague rumors. But these rumors suggested that it would not be wise for me to push my inquiries very far in that direction lest something should be revealed to me too revolting to be remembered without discomfort.

The rural burial places of Mexico are not generally of an attrac-

tive appearance. I shall never forget those which I saw in Northern Mexico. They were of such a forbidding aspect as to add a new terror to death. No attention was given to their adornment except on *el Dia de los Muertos* — the Day of the Dead, or All Souls' Day (November 2d) when graves are generally decorated throughout the land and special masses are said for the repose of the dead. The best burying-ground I ever saw in Northern Mexico might easily be mistaken for the Potter's Field. Apparently the most barren spot was selected for it, and when in one case a railway was built directly across a burying-ground in a town of some size, it excited no interest whatever. Black wooden crosses are generally used to mark the temporary lodging-houses of the dead. *Adobe* tombs are sometimes constructed, and these are more forbidding in appearance than the crosses.

The cemeteries of the larger towns of the interior are great improvements upon what I saw in Northern Mexico, though these generally give evidence of the recent introduction of less barbarous customs in regard to the disposition of the dead. I visited cemeteries in Vera Cruz, Jalapa, Puebla, Toluca, Queretaro and other towns, besides all those of the city of Mexico. They all possessed certain features in common, which might be regarded as the distinctive traits of Mexican burial places. One would be conscious of the existence of these features upon entering one of these cemeteries without being able to discover and localize them, or precisely to define them. It may have been in the general air of neglect — of carelessness as to what disposition was made of the dead. In the city burial place in Jalapa there were some buildings of pretentious appearance, but they were constructed of cheap materials, were suggestive of speedy decay, and were found upon inspection to contain mural tombs *for rent*.

Panteon de San Francisco, Pueblo.

It was in the city of Mexico that the most satisfactory of my observations were made upon the subject of burying places. The influence of a large foreign population has evidently been felt there in this matter. The English and the American residents have cemeteries of their own, adjoining each other at Tlaxpana, just outside the city. There is a French cemetery also at La Piedad. Probably it was originated by the French residents, but it has become a favorite with the wealthier Mexicans, especially those who have imbibed French ideas by long residence in France. It might still be entitled to the name of "French Cemetery," were it wholly given up to Mexicans, by reason of the French taste displayed in it. It is worth a visit. It seems to represent all that now remains in Mexico of loyalty to the Church of Rome. I think that one feels in La Piedad Cemetery, as nowhere else in Mexico, the existence of a religious atmosphere. A religious sentiment is expressed upon the gateway, "Blessed are the dead who die in the Lord," and that sentiment seems to pervade the whole cemetery. There is a little row of graves of Sisters of Charity, and here and there one finds the grave of a priest. Neither are to be found in any of the other burying places — even those which nestle closely up under the shadows of the great churches; and the handsome mausoleums to be found in this cemetery (some of them quite as artistic in design as any I have seen in Greenwood or Mount Auburn) belong to families who have remained loyal to the Church of Rome at the sacrifice of political power under a Government inimical to the Church.

Panteon Santa Clara, Toluca.

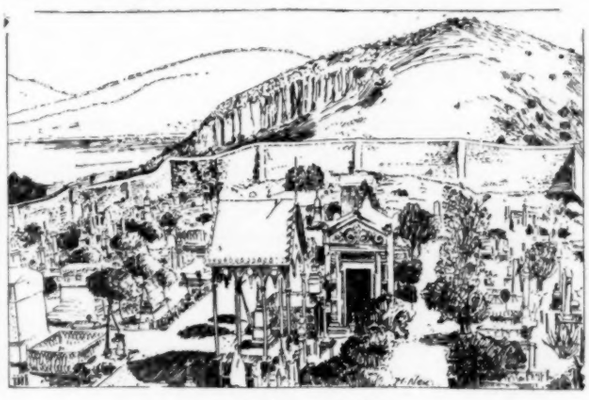
I found in the city of Mexico two names in use to denote burying places. Both may be generic, but *cemetario* seemed to be applied more generally to the suburban cemeteries — those which I have mentioned and also Dolores, which is thoroughly Mexican, though more after the pattern of the foreign cemeteries. *Panteon*, on the other hand, is in general use throughout the country, and seems to include any kind of a burying place, though in the capital it is more generally applied to the narrow, compact, overcrowded burying-grounds within the city walls, and commonly attached to churches.

Panteon Municipal, Jalapa.

The *panteons* present the most interesting phase of this subject for our consideration. The *panteon* of Tepeyac, on the hill back of Guadalupe, is a good example. It shows some of the elegance, as well as some of the bad taste, to be found in Mexican burial places. Graceful canopies of cast-iron, massive tombs of stone, elegant mausoleums decorated with Mexican onyx, all crowded together, the whole surrounded by an *adobe* wall. This *panteon* contains one notable tomb. It is that of General Antonio Lopez de Santa Ana, whose name is better known to Americans than that of any other Mexican.

The most notable of all the *panteons* of the capital is that of San Fernando — almost in the heart of the city. It is the Santa Croce of Mexico. It contains the dust of the most illustrious persons of the last half century of Mexican history. There are greater men reposing here than in La Piedad, yet one does not feel oneself in such refined company in San Fernando as in La Piedad. Although the *panteon* is actually within the walls of the Church of San Fernando, the great men who repose here, were, for the most part, the enemies of the Church. Their greatness was acquired in the politics of Mexico.

The tombs of President Juarez, President Guerrero and President Comonfort are here. General Zaragosa, the hero of Puebla, is buried here. Miramon and Mejia, the two brave generals executed with Maximilian in 1867, are buried, one on either side, not far distant from the tomb of Juarez who signed their death warrant. Many others who took part, on one side or the other, in that famous struggle between the Republic and the Empire, rest within the enclosure of San Fernando.



Panteon del Tepeyac, Guadalupe.

In this *panteon* may be seen to good advantage the mural tombs in general use in *panteons* throughout the country. There are the same reasons for their existence here as there are in New Orleans, where underground tombs are impossible, viz., a wet, spongy soil. Probably all the tombs of San Fernando are above ground. Cremation is not, so far as I know, practised in Mexico, but I once discovered, in a dark passageway leading from the *panteon* into the Church of San Fernando, a shelf upon which were urns containing the ashes of the dead. Probably ashes produced by the natural process of decay.

While San Fernando possesses the most beautiful specimen of monumental statuary I ever saw — the tomb of Juarez[1] — the tombs generally do not compare favorably with those of the better class of cemeteries. They are generally of conventional designs, and San Fernando has the appearance of neglect. But in most respects it is the best example of a Mexican burial place.

Arthur Howard Noll.

ILLUSTRATIONS

[Contributors are requested to send with their drawings full and adequate descriptions of the buildings, including a statement of cost.]

BANK-BUILDING ON WALL STREET, NEW YORK, N. Y. MR. W. WHEELER SMITH, ARCHITECT, NEW YORK, N. Y.

[Gelatine Print, issued only with the Imperial Edition.]

HOUSE FOR FLETCHER COWHERD, ESQ., KANSAS CITY, MO. MR. A. VAN BRUNT, ARCHITECT, KANSAS CITY, MO.

THE house is faced with stock bricks trimmed with light-brown Carbondale sandstone. Hall and staircase finished with white-oak; remainder of interior finish, red cypress. Plate-glass in windows of principal rooms. Total cost, including mantels and hot-water heating, about $18,000.

OFFICES OF THE MUTUAL INSURANCE COMPANY, FREDERICK, MD. MR. J. A. DEMPWOLF, ARCHITECT, YORK, PA.

HOTEL AT LITTLE FALLS, MINN. MESSRS. GILBERT & TAYLOR, ARCHITECTS, ST. PAUL, MINN.

BLUEFIELD INN, BLUEFIELD, VA. MR. GEORGE T. PEARSON, ARCHITECT, PHILADELPHIA, PA.

HOUSE OF E. O. SCHUYLER, ESQ., BERGEN POINT, N. J. MR. CHARLES EDWARDS, ARCHITECT, PATERSON, N. J.

THE ARMSTRONG HOUSE, ROME, GA. MR. G. L. NORRMAN, ARCHITECT, ATLANTA, GA.

A Scheme to Bridge the English Channel. — The scheme of constructing a bridge over the English Channel has just been completed. It has been worked out by the Creusot engineers and M. Hersent, ex-President of the Society of Civil Engineers. The progress of metallurgy makes the construction possible of an immense bridge thirty kilometres long, with a platform at the height of fifty metres above the sea at full tide, and supported by piles at distances of five hundred metres. The height allowed for the bridge over the Channel would allow large steamers and sailing vessels to pass freely. It would support four railway lines, besides a road for carriages and foot-paths. This will be satisfactory for those who dread seasickness. The only trouble left them will be that of choosing their mode of locomotion — whether by railway-carriage, omnibus, cab or velocipede. Places of refuge, watch-houses and alarm bells will be placed on each pile, with a powerful light. The authors of the gigantic scheme believe that the foundations may be constructed by means of compressed-air diving-bells, the depth of the strait between Calais and Dover not being on an average more than from twenty-five to thirty-nine metres, and in few places exceeding fifty metres. The bridge will cost 800,000,000 francs, its metallic weight will amount to 2,000,000 tons and it might be constructed in six years. The scheme will shortly be submitted for an examination to an international technical committee. When this examination has been completed, the Channel Bridge Society will apply for a concession to the French and English Governments from which it will ask no subsidy. Under these conditions the concession might be easily granted and the works immediately begun. In a few years the commerce of the two Nations would benefit from the simplifications introduced into their relations by the execution of a work which might be considered as one of the most important of the century.— *Paris Temps.*

[1] See Illustration No. 589, *American Architect*, April 9, 1887.

PAPYRI AND PORTRAITS FOUND IN THE FAIYUM.[2]

Monument to Berryer in the Palais de Justice, Paris. M. Chapu, Sculptor.

BUT little more than ten years have elapsed since discoveries of greatest interest began to be made on the site of the ancient city of Arsinoë in Central Egypt. The fertile province El Faiyum, lying between the twenty-ninth and thirtieth degrees north latitude, a garden of Egypt, is an oasis watered by numerous arms of the Nile and famous for its plantations of sugar, fruits, olives, vegetables and roses. Its capital, Medineh el Faiyum, lies not far from the ruins of ancient Crocodilopolis which received under the Ptolemies the name, Arsinoë. These ancient seats of empire have now at last been raised from the dead, as it were, by the bringing to light of countless thousands of fragments of papyri and parchments, the source of the supply being, as yet, far from exhausted. The unwearied patience and keen insight of scholars engaged in the task of deciphering these venerable witnesses to the centuries of the past have compelled them to break their silence and tell us of the daily life of old. From the time of the Macedonian Ptolemies, down through the period of the imperial Cæsars and extending far into that when victorious Islam imposed another civilization on the submissive people, we have here preserved for us, by the favorable conditions of Egyptian climate, continuous documents filling up the gap of hundreds of years. A century had elapsed since the first papyrus in Greek cursive writing from Egypt came to light, since which time a great quantity of similar documents from the most varied sites had wandered to the European museums and a new branch of historical science had been established. But the sources were apparently drying up and the Arabs seem to have lost sight of the treasure. This, however, can be regarded as a fortunate circumstance, for nothing could exceed their barbarity and stupidity in the treatment of these discoveries. Of the fifty papyrus rolls found with the one brought to light a hundred years ago, it is reported that they were burned by the Arabs, that they might regale themselves in the fragrance of the burning pile. The lost site coming to light again in our more enlightened age, such treatment of the treasure is no longer possible even by the Arabs.

The documents which have found their way to the museums of Berlin, Vienna, Paris, London, etc., are not from one spot alone, but from most widely-scattered parts of the field of ruins of Arsinoë, mostly the accidental discovery of treasure-hunting Arabs. Occasionally large parts of one manuscript have been found near together, so that the difficulty of adjustment proved slight. But the greater part of the fragments are found isolated between the clods of upturned earth, scattered over the ancient sites as the wind has happened to strew them or the hand of man has thrown them aside. Further, being arbitrarily sundered by ignorant dealers, these treasures have suffered the fate of many other valuable antiquities in

[2] A letter by Mr. Samuel S. Mitchell to the *New York Times.*

American Architect and Building News, July 14 1888 No. 655

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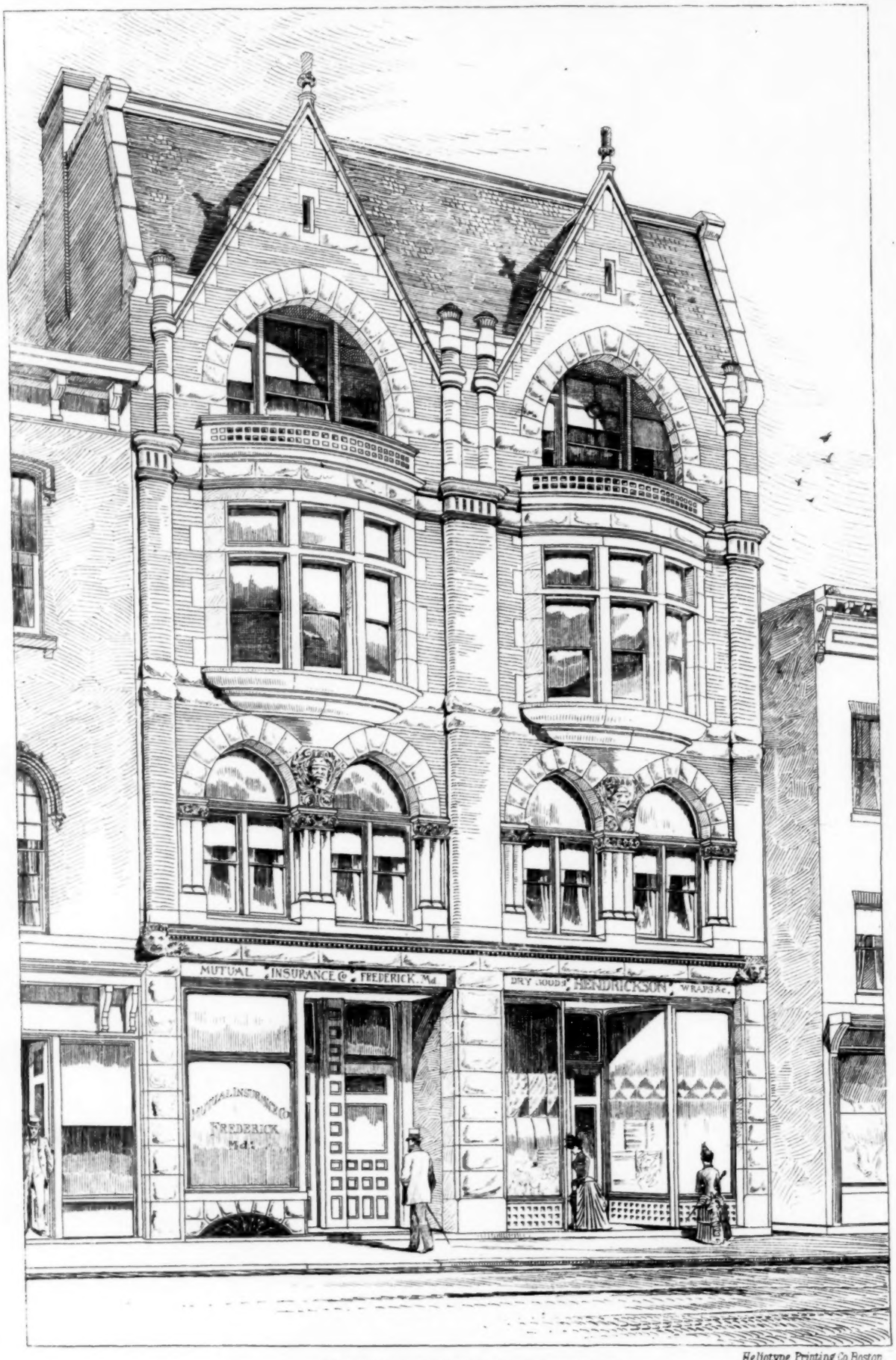

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"BLAKEFIELD INN"

AT BLAKEFIELD, VA.

Geo. F. Pearson,
Architect,
No. 147 Walnut Street, Phila.

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House at
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No. 655 American Architect and Building News, July 14 1888

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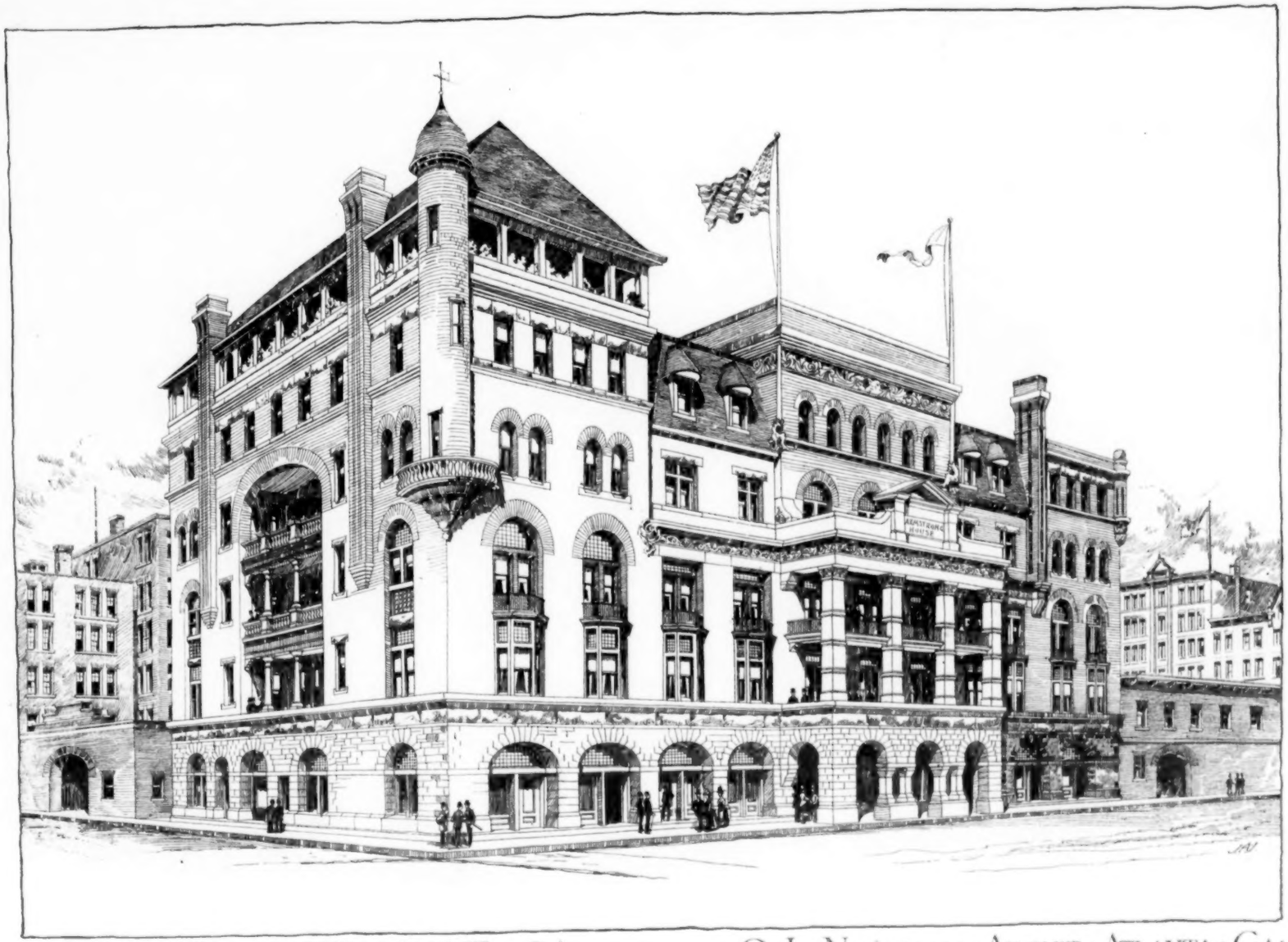

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our museums. In some cases fragments of the same whole would be widely scattered, a part finding its way to Paris, another to Vienna, a third to Berlin. A whole series of fragments in the Bodleian Library at Oxford were found to fit exactly into the papyri of London. Many fragments may have fallen into other hands and some still be in the possession of the finder. Of the more recent acquisitions of the Berlin Museum, which had already a collection amounting to 3,600 numbers, it may be said that the greatest care has been taken to obtain accurate information as to the exact locality from whence they come. Not all the new papyri come from Faiyum, but the greater part from the neighboring city Herakliopolis Magna and Hermopolis. In the case of the Faiyum treasure proper, pains were taken to ascertain on which of the numerous mounds of fragments of the Arsinoë ruins they were found. Herein lies a great advance on former classification, which gave in general the name Faiyum papyri to all fragments coming from that province, or even from the neighboring provinces; for since the meritorius labors of the African traveller, G. Schweinfurth, have defined the topography of this important province of Egypt, and especially of the old necropolis, Arsinoë is no longer a unit, but we see that the traces of the old city are marked by widely-scattered mounds of débris and fragments. This great accuracy in finding from which of the mounds the fragments come has facilitated the connected treatment of the whole for historical purposes, and that especially since, according to the investigations of Prof. A. Ennan of Berlin, the development of the city in the course of the centuries shows a gradual transfer of its site from north to south.

The work of conserving this mass of material is yet far from completed, and any report as to its contents can at the best be only fragmentary. A great part lies still a conglomeration, rolled together and solid, as when it came to light. To separate these attached fragments the greatest caution is used, the process being to lay them between two dishes, which are then wrapped in wet cloths. The moisture generated serves to loosen the compact mass, and the fragments, often apparently insignificant in size, are then, with infinite pains and many times after prolonged search, fitted into their proper surroundings. The texts are not found to be written exclusively on the usual papyrus, formed from the pith of that reed, growing on the banks of the Nile, but to a considerable extent on rag paper, as shown by the microscopic examination of Prof. Wiesner. This paper is made serviceable for writing by a coating of paste, and Prof. Wiesner has shown that the Arabs of the eighth and ninth centuries were also acquainted with the process of making paper from rags.

The fragments at Berlin include rolls in Greek, Arabic, Coptic, Phlewi, Greek seal writing, Demotic, Hebrew, Criptic writing, Greek tachygraphy, Latin parchments, Syriac papyri, and hieratic writing. Many of the manuscripts baffle entirely the scholars, and the problems in paleography will doubtless long remain unsolved. One singular class of fragments is made up of those in which a mosaic of entirely disjointed bits of writing, running in every possible direction, is found on a single leaf. Whether artificially produced by the sly Arabs for trade or the result of the pressure of the superincumbent sand through centuries, these remnants are still an unsolved mystery. Of most general interest are the Greek fragments. Of these a small part are literary remains, remnants of manuscripts of the classical writers, and religious texts, partly on papyrus and partly on parchment — a valuable addition to the material of classical philology. Besides familiar portions of the Odyssey and Iliad of Euripides, Hippolitus, Theocritus's Idyls, of Aristotle's Analytics, of Gregory and Basil, and of the Psalms and Gospels, there were found a new fragment of the poetess Sappho, a fragment of the lost Melanippe by Euripides, an epos which celebrates the combats of the Blemyans, with passages of singular beauty, and, above all, important fragments of the "Politics" of Aristotle, a work the loss of which has been regretted by antiquarians more than any other and throwing light on the development of older Attic history. Especialy to be noticed is a fragment of manuscript containing a speech by Demosthenes against Leptines, from the first or second century A. D. Among the Coptic fragments are many valuable acquisitions. Of special value is a well-preserved, extensive document on paper from Hermopolis Magna, containing a letter by Bishop John of Shmun to the members of his diocese in which he pronounces a dire malediction on those knowing who the thieves are that had broken into the house of a woman, Girampolis by name, yet had not reported them. The curse shall penetrate, he says, into their vitals like oil into their bones and they shall be destroyed like Sodom and Gomorrah. This is a new and interesting illustration of the manner in which, at that time, church discipline sustained the civil power, or, in other words, supplanted it.

But such literary fragments are an insignificant quantity compared with the official files, census lists, receipts for taxes, temple account-books, accounts of private persons, contracts of every kind, business and private letters, and magical writings of the Gnostics, comprising by far the greater part of the rolls, valuable material for the historian and the linguist, such as the past of no other lands affords. Most of these are externally distinguished from the classical fragments by their varied cursive hand-writing, abounding in ligatures and marking the individuality of the writer. The professional scribe holds the pen easily and with graceful elegance; he loves ornamentation and abbreviation. The peasant and the laborer, on the other hand, who record their domestic status for the tax-gatherer, if they write at all, put the letters clumsily in their order, evidently in the sweat of their brow, and know no abbreviations. These characteristics of individual style, as well as the nature and the color of the papyrus, are of great service in putting together the sundered fragments, which, by the way, is pronounced by those engaged in the task to be one of the chief charms of the study of the remains. The documents of this description extend from the time of the Ptolemies through the first centuries of the Christian era, the Byzantine period, and down to the period of the occupation by the Arabs. Many names of emperors occur. These are authentic witnesses of days long gone by. The searcher feels here the pulse of reality. There are no subjective theories and reflections of historians upon their times, but the proclamations of Government, the expressions of subjects, plain, unvarnished facts from which all history must spring. By the aid of these records, as well as those in the other museums, the hope is awakened that much light will be thrown upon the details of the administration of Egypt as a Roman province, especially as concerning taxation, and, as Egypt was the granary of the empire, her economical relations doubtless served as a model for the other provinces. There are preserved many reports of tax-gatherers to the emperors, concerning taxes collected on property and crops, as well as many admonitions of the authorities to the peasantry to be diligent in their labors that they may be able to meet their obligations to the State. We find accurate reports of the personal possessions of the tax-payers, besides those relating to the census and the income and disbursement of the temples.

From the time of the Ptolemies was found a valuable fragment, dating from the first year of King Philometes, 177–6 B. C., accordingly one of the oldest preserved Greek papyri. Fragments from the first centuries of our era are also largely represented. An interesting act of manumission dates from the third century. An excellently-preserved and splendidly-written contract from the fifth century of Diocletian stipulates for the purchase of a male Arabian camel. One fragment instructs us in the full titles of the Palmyrene King Vallabath, of whom our knowledge has been thus far limited to the short and ambiguous stamps on his coins. The records of the later centuries have, in general, a more private character and throw light upon the practical application of Roman law in the province and, hence, upon the history of jurisprudence. The number of contracts dating from the sixth and seventh centuries is very large, as from the reigns of Justinian, Justus II., Tiberius, Maricius, Phocas, and Heraclius; even from the Arabian era contracts are found, dated according to Diocletian chronology. Much light is thrown upon the elaborate bureaucracy of the Byzantine age with hitherto unknown official titles. Where the Greek scources leave us, the Arabic take up the thread and show us the picture of the administration through centuries. So long continued an historical tradition as that of Egypt, extending through thousands of years, has no other land. The oldest preserved hieroglyphical monuments extend far up in the thirtieth century before Christ, and when we consider the height of civilization reached at that time, we are compelled to go back many centuries still to find the primeval race. After the hieroglyphics, the national sources flow, now more freely, now more sparingly, and from them we learn the fate of dynasties and generations till after the conquest by Alexander, when the Greek sources are supplanted by the Arabic, which serve to join the older tradition on to modern Arabic history. And so we follow up the unique civilization of the Nile, and herein lies the special value of the discoveries at Faiyum that by them a break of several centuries is filled up.

From these ancient fragments Greek philology reaps its harvest in the dialetical variety furnished by the official style and popular language. A new epoch begins for paleography with the tremendous increase of material. Egyptology is enriched, for the innumerable proper names in Greek transcription, found in the papyri, as well as the Coptic fragments, furnish an invaluable aid in the vocalization of the Egyptian. Finally, from these rolls will in time be supplied a fresh, living picture of the life of a Roman provincial town. The old city of the crocodile-headed god stands, if not before our actual sight, at least before our mental vision. The names of streets, places, theatres, temples, gymnasiums, hippodromes, and baths which adorned the old Egyptian Hellenic city make Arsinoë, like other Egyptian cities from which we have papyri, a living reality.

Besides the papyri, there is another class of written monuments from Egypt, which, likewise, reveals much of the ancient days. These are fragments of pottery called ostraca. The Arabs, in their proneness to writing, were not over particular in their choice of material. Those for whom papyrus was too dear resorted to most varied material, leather, wood, bits of limestone, and fragments of pottery. The latter were, in fact, a favorite, so that even upon this modest material we find official documents inscribed. The Berlin Museum has now over a thousand of such ostraca, partly from the southern confines of Egypt, from Elephantine, an island opposite Assuan, near the first cataract, partly from Ermut (Hermonthis), the bulk, however, found in the ruins of Thebes, near the present villages of Karnak and Luxor, and on the opposite shores of the Nile. The Berlin Museum has also about 70 ostraca from Sedment, near the boundaries of Faiyum. Upon them were found as in the case of the papyri, most varied writing. The demotic fragments come from the time of the Ptolemies and the beginning of the Roman period. They comprise receipts for payment of taxes, letters, formulas of oaths, etc. The Greek ostraca are from the same period as the demotic, but extend also far down into the Byzantine period. The Coptic are probably exclusively from the hands of pious Christians, and contain mostly prayers, ejaculatory appeals to God, and

letters full of Christian exhortations. In some cases bilingual inscriptions, demotic and Greek, were found upon the ostraca. The receipts for taxes, which go to make up a large part, are of interest as aiding in the investigation of the financial administration of Egypt and the ancient world in general. To give a clear conception of these receipts the following interpretation by Dr. Wilkens may be of service: "Valerian and the other farmers of the 'Holy Gate' in Syrene, by Sarapion, the scribe. Harpoësis, son of Phanopis, by the mother Tachomtbitis, has paid the trade tax for the second year of Hadrian, our Lord, with twelve drachmas — 12 dr. Anno 3 of Hadrian, our Lord, 17th day of Thoth."

The recent discoveries in a necropolis, not far from Arsinoë, have thrown unexpected light on old Greek portrait painting. These portraits, which were taken from the mummy shrouds, will interest not only the archæologist and historian of art, but all friends of painting and its history. The first supposition was that they represented the citizens of Arsinoë, which was doubtless the most important of the Roman cities of that province. But the portraits were found in a rocky cave, fully 16 miles from the city, near a place called Rabayat. This spot is near the site of the ancient town Kerke, which held only a remote connection with Arsinoë and belonged to the Province of Memphis. The more probable assumption then, is that the inhabitants of Kerke are represented here. With the portraits were found three wooden tablets, informing us that the burial places of Rabayat belonged to the harbor of Kerke. Although the description of Kerke as a harbor does not agree with its present condition, yet the hydrography of the region indicates clearly that it once was in easy communication by water with the neighboring avenues of trade, and the remains of a pyramid in its vicinity having no connection with Memphis, indicate that it may once have been an important city.

The custom of portraying the deceased in the receptacles of the mummies was prevalent at an early day in Egypt. This in the oldest times was done, not by painting, but by carving at the head of the sarcophagus. The hands were also carefully carved, while the rest was represented as wrapped in the mummy shroud. Such sarcophagi were of stone, wood, and papier-maché. In those made from the latter material the portrait was treated in color as well, and though there are occasional instances of speaking, plastic portraiture, they are all, without exception, handled in the unsymmetrical flat method of this branch of Egyptian plastic. Mummies, like these found at Rabayat, in which the portrait is given, not in plastic form, but by a painting on linen or on a wooden tablet, having its place in front of the head, are very rare, and such as have been previously found do not approach the recent discoveries in artistic value. Unfortunately the Egyptian fellah who opened the rock cave of Rabayat had torn the wraps and portrait tablets from all the mummies; still, it was possible to ascertain the manner in which the portraits were attached. The wooden tablet was fastened with pitch on to the mummy-wrap, and, to give additional security strips of linen running around the wood, like a frame, were likewise fastened with pitch, first on to the wood and then on to the mummy. But one inscription was found on the Rabayat mummies, which, from analogy, probably was the word used in parts of the Hellenic world as an exhortation to courage in the trying hour. The portraits are without exception painted on thin panels of sycamore wood, in wax encaustic colors. All that we know thus far of this method is that the various colors were mixed with wax and blended by means of heat and the use of small instruments of metal. These discoveries will doubtless make possible a nearer acquaintance with this technique. Of 66 portraits, mostly busts, 3 were of old men, 24 in middle life, 4 youths, 3 boys, 29 maidens or young women, and 3 matrons.

These numbers are stricking, especially when we remember that death's ravages are greatest among the classes here most sparingly represented. Of 25 young infants and aged women there were found no portraits. Was this because the babe was not considered of sufficient importance to receive the honors and accompanying cost of portraiture? Moreover, it seems that the Greek sense of beauty rebelled against depicting the wrinkled features of age, although a few old men with expressive countenances were preserved. The supposition that it may have been usual, while still in the bloom of health, to sit for a portrait, and that the likeness after death was placed on the mummy, may meet with some advocates, since we know that the Princes and great ones of Egypt occupied themselves with the preparation of their tombs and funereal vaults; but the more likely hypothesis is that only the portraits of such were attempted whose countenances seemed beautiful or important enough to their friends to be preserved to future generations. That all the portraits belong to those of the better and in fact of the highest rank is evident from the aristocratic clothing as well as from the laurel wreaths and chaplets of gold about the heads. This impression is strengthened by the exquisite beauty of the youthful female heads. An indescribable air of nobility seems to hover about them. The finely modelled Greek features, the undulating locks of golden hair which adorn the head and brow, the expressive eyes which look up from the wooden panels, just as they did nearly 2,000 years ago, would at least awaken homage and wonder as much to-day as then, could they live once more among us. The women nearly all have ornaments and often jewels of great value. Looking carefully at the faces, we find that few can be ascribed to that type generally known as Egyptians, from the monuments, the descriptions of the Greeks, and the appearance of the Copts of the present day. And although the dark complexion in these faces is thus ascribed to the Egyptians by Greeks and Romans, it is to be considered that the southern sun soon browns the northern faces, and the Hellenistic Greek, whose colonies occupied Egypt generation after generation, would hardly have retained the fair skin of his motherland. In any case, most of the countenances seem to betray Greek features, and this is true of several with dark complexions. Among the rest must be noticed six of a decided Semitic type, and this will not awaken surprise when we consider the position of the Hellenistic Jews in Alexandria. No. 64 is interesting as representing a man in whose veins flows Ethiopian blood. The woolly hair, thin mustache, as well as the prognathous jaw, are, however, joined with the light brown Egyptian skin, strong beard, and other features which mark a mixed descent. The excellence of these works would lead to the supposition that they represent the Hellenistic art of Alexandria and in some cases the work of great masters, and, as we know that the citizens of Arsinoë, in order to do honor to the highest imperial officials, employed at great expense a rhetorician, brought from Alexandria, to prepare a suitable address, the conjecture is readily at hand that a rich man of Kerke in order to honor the memory of his deceased wife or daughter might engage the services of some great master of the art in the metropolis. Such a call would certainly not be inexpensive, for under the Ptolemies the services of the greatest masters were weighed in gold, Ptolemy Soter paid Nikius $90,000 for his Nekya, and Pamphilos took a tuition fee of $1,200 yearly from his scholars.

While our knowledge of the capabilities of the old Greek painters has been thus far confined to a few frescos and vases, and while no panel painting, except perhaps the Muse painted on slate at Cortona, corresponds to our high conception of their power, the discovery of these portraits shows that if in this provincial town of medium size pictures could be found of such worth, by no possibility the work of the greatest masters, then the capital of Egypt certainly would have furnished works of still more surpassing excellence. Still another explanation may be found for these extraordinary portraits in so comparatively obscure a place. The necropolis of Kerke held a peculiar position belonging to those which had especial attractions. We know that the ancient custom was still kept up in Hellenistic Egypt of transporting embalmed mummies to place them in favorite necropoli. In early times the wealthy subjects of the Pharaohs conveyed their friends to Abydos, and the same was true after the Hellenizing of Egypt. That this transporting of remains to Kerke from larger cities occurred, is proved by one of the labels on the mummies from Rabayat brought from Philadelphos. The appearance of such important works of art on the mummies of a provincial town finds an explanation in the fact that rich Hellenic Egyptians in the great cities of the land, and also in Alexandria, sent the bodies of their friends to this spot, which may have been their native place or have offered especial advantages to the souls of the deceased as a place of interment.

The time of the execution of these portraits can only be between the period of the consolidation of Hellenic life in Egypt and the edict of Theodosius, for since the time of Ptolemy Philadelphus (247) the worship of Serapis had begun to flourish, blending the religious sentiments of Greeks, Egyptians, and perhaps Jews. Later than the edict of Theodosius (395 A. D.), the ruler who attacked with such rigor all pagan work, these portraits cannot be placed, for that they represent heathen and not Christian dead there can be no question. The monuments of this class are adorned with many heathen, Egyptian emblems, and with the bands which the Greeks in their own land employed in their funeral rites. The frequent occurrence of garlands of flowers and leaves, a custom rejected by the Christians, would alone forbid any other than a heathen origin for these portraits. In them the characteristics of later Greek come out prominently. The striving is to give the appearance of reality. The individual stands out, not even personal deformities being avoided. One portrait shows us a man with a marked physical deformity of the neck, reminding us of a like representation in the busts of Alexander the Great from the time of Lysippus, and, as in the latter, so here, the artist has preserved the realism in giving the deformity, but avoided any impression of revolting ugliness. Among the better portraits, not one fails to give us the impression that they are of undoubted, speaking lifelikeness, and this applies to the color as well as the form and expression. If we place the brown Hellenic Egyptians, with manly features, speaking eyes, energetic mouth and black full beard, beside the tender maiden with white, rosy tint and wearing a golden chaplet in her black hair and costly necklace of precious stones about her neck, this sharply-defined individuality becomes most evident. But it is not necessary to take such extremes, the same characteristics run through all these portraits, whether of youth, maturity, or age. The art belongs intimately to that stormy age which is so forcibly called to mind in our galleries by the numerous statues, representing every possible phase of human life, from the humble fisherman peddling his wares and the infant struggling with a goose to the dying warrior and the hero triumphant in conflict.

As in art, so in letters, the striving was universal after individuality. The historian of this post-Alexandrian age was also a portrait painter, and sought to give a detailed picture of the characters he discussed, their personal appearance, even their mode of attire, their food and drink, spicing his recital by anecdotes from private life. Moreover, this realistic vein ran through every department of human activity at that time and was the fertile germ of the inductive sciences. The results of this spirit of observation show themselves in the rapid progress made in natural science, medicine, mechanics, astronomy, etc. But this realism had its ideal also, which was truth, and this

effort to represent life as faithfully and convincingly as possible in art reached not merely after the outward form, but the whole inner life and disposition of the one portrayed. We may well wonder to find works like these coming from Egypt, the land in which the fine arts were so bound by types and canonical rules, and that also from mummy shrouds. But this wonder will disappear as soon as we remember that here, too, Hellenic art, both in sculpture and painting, was able to supplant the national art and that the cultured classes associated themselves with the more advanced civilization in everything that related to the higher intellectual life. Greek had become the language of the educated, and even the native tongue was permeated with Greek words. The Egyptians sought to be distinguished as little as possible from the Greek immigrants in scientific and æsthetic matters and thus became absorbed in the all-pervading spirit of the times.

BUTTRESS AND PILASTER.

Restaurant at Dornbach, Austria. From Architektonische Rundschau.

THE study of a subject which happens to be novel to us may be approached in two ways. Each has its special advantages, and neither therefore can be wisely left entirely aside. But it may make no little difference which we commence with. We may, if we please, plunge at once into the examination of all that has been done and the study of all that has been written,— let us say, respecting buttresses and pilasters. Or, we may take our stand in the first instance at an independent point of view of our own and look at the conditions of the subject in the abstract. By the subject of the pilaster in the abstract, nothing more is meant than a notion of it under the very simplest conditions which will leave it a pilaster still and nothing else. When this notion has been successfully seized, we have mastered a primary definition,— the value of which it was the great service of Socrates to first impress upon the world. We may then advance to a notion of less blank simplicity, and so on to others less and less simple, and to the concrete examples. Sets of concrete instances are thus taken up in classes, one after the other; vigilance only will be found imperative if we are to treat the matter exhaustively, to make sure that at least no important variety escapes the meshes of the logical net.

The best chance of arresting such fugitives is to check our theoretical definitions by comparisons of the scheme with the series of invented and actually executed forms. It will then also be found that our preliminary analysis has wonderfully cleared our ideas and put us well on our way to estimate those forms at their true value, to judge of their consistency,— to mark where art went astray as where it lingered and stopped short.

A grasp of the theory of any art affords a clue through the mazes of the history of art; by occasional recurrence to it we are best preserved from having sympathies and attention engrossed by certain limited developments, and so being led to confound what is accidental with what is essential. So also are we warned that not all development is historical. That human nature does not only copy and only inherit and only pursue a transmitted hint, but that it is capable of true originality in every age,— that in fact there is such a thing as true artistic mother-wit,— as genius.

When we start from the most general definitions that we can contrive, it is easy to distinguish the pilaster from the buttress.

The buttress is an architectural member specifically adapted to resist oblique pressure from above. On the other hand, a pilaster is an architectural adjustment intended and adapted to contribute to the stability of a wall as subject to be affected by direct down press or by transverse lateral pressure.

The stability of a wall is in the first instance in danger from exposure to a weight acting by direct down press. It may even be inadequate to support its own weight. There is a limit to the height to which a wall of a certain thickness, whatever the solidity of its construction, can be safely carried up. The lower part may be crushed at last by the unsparing accumulation of superincumbent weight.

A wall is further responsible for resistance to whatever lateral pressure it is likely to be exposed to by various accidents. A low, thin wall may give way even by a man leaning his back against it; a lofty, thin wall may be unable to resist the impact of a high wind.

It is to preclude disaster from this latter source that Homer in a simile ascribes to the builder of a lofty erection, great accuracy in the close jointing and bonding of his materials. The Myrmidons, harangued by Achilles, take the order which was afterwards known as the *synaspism*: —

Thus saying the vigour and courage of each one he excited,
And the ranks all the more closed up, as they to their king attended;
And, as when a man is constructing a wall with stones closely adjusted,
For a lofty mansion, and takes against violent blasts precaution,
So justly the helmets and shields of bossed circuit were ranging together;
Shield did on shield, and on helmet did helmet, and man upon man press,
And touch did the horse-hair crest upon their shining helmets
As they nodded; so close and compactly by one another stood they.

[Exact literal and lineal translation.]

The obvious remedy is to increase the thickness of the wall absolutely, and its breadth relatively to its height. But this remedy may be applied by either a uniform increase of mass or by stiffening the construction by increased thickness at intervals. Sufficient strength may possibly be imparted by dividing up the wall in this manner, while material is at the same time economized. The effect of any direct lateral push will be thus limited, and the danger avoided of a weaker part being exposed to an extensive leverage.

It is seldom that such a push as a wall has to resist, is a purely lateral pressure; even a heavy gust of wind will usually impinge obliquely from above downwards, and thus to exert what is actually a thrust. A pilaster is therefore certainly in some degree apt to be responsible for that resistance to thrust which is more properly the function of the buttress,— even as the buttress will in some degree be frequently charged with some of the duty of a pilaster.

Still the primary and essential characteristics of the two members are distinct, and it is appropriate, when artistic expression is in question, that each should have its own specifically and decisively pronounced.

The simplest development of the pilaster is a partial advance of the wall from space to space, beyond the plane of the intermediate and general curtain. The projection of such a member is appropriately less than its breadth, as it is in effect only so much of the wall emphasized. The determinations of proportions within this limit remains within the scope of taste and judgment. Something depends on the materials which are employed. It is evident that it would be out of place to advance pilasters from the face of a wall which is visibly constructed of massive blocks; but they lend themselves naturally to harmonize with a construction either of bricks or small stones. A pilaster may be so massive and have such projection as to induce an impression of excessive weakness in the wall which it protects,— a most unfortunate consequence; in such a case it will infallibly appear that the member is an afterthought to prevent the ill-constructed wall from falling down; or its excess of strength will suggest the unpleasantness of tending to break away from a weak and ineffectively bonded associate. Pilasters, again, may be so closely spaced as to forfeit the proper expression of subsidiary character and usurp that of the wall itself — divided by narrow panels.

The most frequent application of the pilaster is at those points of the wall where it receives the simple pressure of the main beams of a roof. Nothing but such absolute vertical down press is recognized as a possibility when the strengthening member has more width than projection. Adherance to such a flat form is rational and appropriate when chapel or church is truly covered by means of the timber truss, and when this is not merely employed to weather fend a roof of arched masonry below. It is therefore inappropriate when arched windows of considerable span give logical intimation that — whatever may be the fact — consistency would be consulted by an interior vault in masonry.

Another application of the pilaster proper, is as strengthening the free end of a wall. It is in this position that we meet with it in the ennobled form of the Greek anta. Here we at once observe the care which the Greek took to preserve its characteristic relation to the wall as its immediate development. He gave it a capital which harmonizes with that of the associated column but is most distinctly different from it; and while its proportions are dependent on the column to which it is opposed, its outline preserves the true verticality of the wall, and it is further united with it by continuous base-mouldings.

The angle of the north portico of the Erechtheum supplies an example of how the simple pilaster is naturally developed into a compound pier or its equivalent, by the concurrence of a proper anta and required termination of a wall. There is but one step from this combination to the free compound pier, — but this step the Greeks seem never to have made or indeed to have had occasion to make. The engaged columns between the windows on the west front of the Erechtheum are appropriately treated as columns, not like the members which answer to them in the interior as pilasters. Their important relation to entablature and pediment above demonstrates that the function of the intermediate wall with large opening is here subordinate.

The Roman architects lost touch of the true idea of the pilaster; they gave them capitals, bases and profiles and frequently flutes like true columns from which they were only distinguished by being flat. The unfortunate consequence was that instead of showing as the wall strengthened they look like weak slices applied upon it. This type is before our eyes commonly enough in London, — a heritage of the days when Pope at least could recognize its falsity:

> Then clap four slices of pilaster on't
> Which laced with bits of rustic makes a front.

True pilastral treatment is exemplified on the exterior of S. Apollinare in Classe at Ravenna, where the entire length of the wall is occupied by a series of flat brick pilasters. They are uniform from the ground-line upwards and connected by arched architraves of like section under the cornice. This is the treatment which reappears in the Romanesque churches of Spires, Worms, and abundance of other structures of the same style and period. Thence it is traceable throughout round-arch architecture and through all stages of its subsidence into pure ornament; an intermediate pilaster is omitted and the arch which it would answer to rests on a corbel; then several such corbels are interposed between pilasters farther apart and at last they become continuous as a corbel table, of bold projection first and then in relief.

Here, as elsewhere, the general tendency of an advancing art to press simplicity to elaboration told with full effect. The Cathedral of Pisa exemplifies how engaged columns were substituted for pilasters on the side walls and how the simpler ornamental arcading in relief developed into open galleries of small arches resting on a multitudinous series of pillarets. Considering the early date of this vast and elaborate cathedral, 1092 A. D., we must credit the architect with at least promoting that application of slender subsidiary columns and shaftlets which speedily, as at Salisbury and elsewhere, had such admirable results.

In the second volume of Fergusson's "*Architecture*" (p. 225) the value of pilăstral treatment is conspicuous in the Campanile of S. Andrea, Mantua, as contrasted with the plain surfaces of that of Verona on the opposite page. Still the Mantuan example is manifestly incongruous in this respect, that the strengthened angles continue unchanged through the upper story where not only is the intermediate wall-space almost superseded by a void from the large size of the Gothic windows, but the grand arches of these argue that the chamber within should be vaulted; yet the forms of the external pilasters by the angles, are out of all natural relation with the vault so postively implied.

The manifest capability of a pilaster to give protection to the exposed end of a wall and of a series of pilasters to stiffen a prolonged plain wall, endows the member with an expressive power which is architecturally valuable whether such positive services are really required or not. Pilasters suggest strength when appropriately and plausibly introduced; and they preclude any suggestion of a thought of weakness, which in itself is disturbing.

The essential and primary characteristic of the constructional mass which forms a proper buttress, is its disposal in a manner to secure stability by affording resistance to pressure acting obliquely. The first condition of this is manifestly that it shall be erected in the plane of the line of thrust. The resistance to such thrust is ultimately the solid earth, and the very simplest form of buttress would be a sufficiently rigid prop conducting this pressure in a direct line to the earth as its abutment.

The wide spread which this would necessitate, may be dispensed with in more ways than one. Thrust may be opposed by counter-thrust and so the two be resolved into a vertical resultant. So the adjacent pier arches of the nave of a cathedral, balance each other and rest in common on the vertical pier or shaft below, and the last semi-arch of the series alone is indebted for support to an independent abutment. Some of the most ingenious and beautiful combinations of the Gothic architects are worked out by reliance on this principle.

Otherwise the thrust may be conducted to a mass which shall be sufficiently solid to resist the pressure which is thrown upon it and to form a positive abutment. The efficiency of such an abutment is made up partly by its rigidity which may be equal to resisting the displacing power of the whole or at least a portion of the thrust; — as might be the case if this were received by a firmly fixed vertical iron rod; and then by the downward pressure of a mass acting transversely to the thrust and causing a resolution of forces which deflect it to the solid earth. Such is the effect of loading a pier above the point at which it is subjected to an oblique thrust which tends to push it over. The superincumbent weight supplied in this manner may be so predominant and the mass of the resisting pier also so considerable, that the force of the particular thrust is lost within its mass. But when the concern is with elegant architecture, it is of importance to avoid any appearance of clumsiness, and such an appearance is inevitable whenever means are employed immensely in excess of the requirements of purpose, or of what are naturally suggested as its requirements.

The suggestion of requirements has to be taken into account in fine architecture almost as seriously as actual requirement; it may be of consequence to consult and conciliate it when actual requirement there is none. If the form of a structure inevitably suggests the notion of thrust, this notion must be satisfactorily set at rest by some visible recognition — though actual thrust there may be none. The disquieting notion must be tranquillized by the counter suggestion of provision against it, provision easy and adequate, not overdone and anxious. It is by the invention and application of treatment significent of such provision, that architecture becomes expressive and refined.

In the case of the buttress we find these elements of appropriate expression. The so-called flying-buttress is essentially a member for the transmission of the direct thrust. The erect-buttress in the same plane admits relation to this force by having a projection in excess of width and then by one or more sets-off which intimate the progressive deflection of the counteracted thrust. Finally, a certain load is appropriately added to the buttress above the point where it is met by the oblique pressure, and this contributes to the impression of the steadiness of the general combination. It is important that this superimposed mass should be sufficient to imply that its function is taken seriously; with that allowance it affords a fit opportunity for embellishment. Crockets and panelling and even niches may give ornamental finish to conspicuous pinnacles and may be felt as symbolizing the ease and repose of power so conscious of sufficiency as to afford a surplus for the indulgence of pure delight.

When the mass above the point of abutment is frittered to a slender pinnacle, it loses its expressive value, whatever may be the beauty of its details. This crowning member is, in fact, the capital of the buttress and like the capital of a column challenges a degree of ornamental treatment of a style and degree which shall not vitiate its functional importance.

As regards a buttress which meets a wall it may appropriately die into it at a steep slope at the summit and so give the same acknowledgment of thrust which is conspicuous in the free flying-buttress; but otherwise dignity is consulted by the off-sets below being both shorter and less steep, expressing thus comparative indifference to the original direction of the force which is assumed to be ultimately lost as it descends.

The organic connection of the buttress at large with the main structure is usually sufficiently displayed by occasional continuous string-courses and by its participation in general base mouldings. The model of the plain flat pilaster was long adhered to and even after the adoption of vaulting demanded a change of treatment; it figures accordingly in many variations as a Norman buttress in virtue of its misapplication. The natural propriety of a model which should have more projection then breadth was recognized at last and by degrees adopted universally. A lingering feeling for the superseded form restrained in many instances the reduction of the unnecessary breadth; but the true idea of the buttress when fairly recognized, developed with an energy and variety of which we have multitudinous and glorious examples. The exuberant invention of the mediæval architects which seems inexhaustible in combinations of vaults and arches, and the resources at their command invited them to exploits so daring as to put to the test all the capabilities of such an aid to construction as the buttress. Their anxiety to make the very most of their materials while still securing stability and equilibrium, operated in the same direction.

It would be too much to say that while the buttress was admirably developed and put to its true purpose, it was never put to any other. If what were in fact a pilaster had once been made to do duty as a buttress, the buttress in turn was not unfrequently employed for a pilaster, as employed in positions where whatever may be the actual fact there is no appearance of the existence of such a thrust or suggestiveness of thrust as will justify the application of the buttress form.

It is not even every thrust which demands the relief of a buttress, arches of moderate opening and light mouldings declare themselves as perfectly maintained by the mere rigidity of the wall in which they are inserted; in other cases as in the name of a cathedral there is sufficient mass in the "antique pillars' massy proof" to carry down any lateral pressure and then the counter-thrust of adjacent arches results as already noticed in a composition of force which is equivalent to vertical down press. A buttress where a buttress is manifestly not required is an intrusive impertinence; a buttress overpronounced for its occasion sins by the clumsy officiousness that encumbers by proffered help. A buttress which may be appropriate in itself but of which the requirement is absolutely masked is unfairly left deprived of its true justification.

Examples of all these errors are salient to view among some of the very best achievements of the mediæval architects. It is well that we should note this. Moral nerve as well as critical is braced by not flinching from calling to account, when we believe they deserve it, even those whom we acknowledge in so many respects as masters. Some of them may always be called in as assessors in judgment upon others.

The buttress never attained and probably is not susceptible of the same independent beauty as the Greek column. It was this beauty which caused the column to be introduced so frequently as a purely ornamental feature. To this there may be no objection so long as it was not so employed in a combination which suggested to the mind that it was degraded from its proper character and reduced to idleness. A majestic column is an anomaly when it merely supports a segment of a broken establature and has no real work to do beyond exhibiting itself. There is not the same objection to the employment of smaller columns in trivial but graceful combinations; and architectural records can produce many examples of compositions in which columns and architraves and even pediments are treated very unceremoniously if we regard their original proprieties, but with a free grace approaching to playfulness which is not always out of place and may be very engaging.

The nearest approach to such purely ornamental employment of the buttress is also in works of reduced general dimensions, as in the tabernacle work of chantries and tombs. In these we often find them combined and grouped with interesting ingenuity and what may be called picturesque effect, even when incongruously applied to screens the solecism is masked by diminutiveness. But the buttress like the column has unfortunately been too often seized upon as a conspicuous feature available for giving the relief of a certain variety in places it has no structural justification for appearing at all. In other cases so much attention has been engrossed by the chance of introducing some variety, that a true structural relation has been ignored and covered up out of view. A buttress perfectly in place has thus been left to itself with quite as little visible excuse as another which is absolutely gratuitous: treatment which goes far to degrade it to the position of one which is manifestly in a useless or in a false position.

How shall we justify a buttress in the plane of an unpierced wall? Not easily, it would seem. Even if the wall is weak, it is in no danger of falling to ruin in this direction; the utmost that it requires is what we have called a pilastral fortifying of its free extremity, or of its angle if it is returned. The buttress in this position is opposed to no thrust, nor is there anything to suggest the notion of such a thrust. Yet we have not to travel far among Gothic designs, earlier as well as later, to find buttresses officiously attending the lateral walls of a porch or a short transept, and even indeed presenting their sides at right angles to the wall in which the inserted arch of a window or an entrance does provide some suggestion of a thrust in an opposite direction. Surely this countersense is aggravated — is duplicated — when another buttress is associated with the first at the angle, in the plane of the transverse and equally unpierced wall.

What, however, shall we say of such buttresses when set at right angles to each other, where the walls in their respective planes are really pierced with arches, and a double suggestion of thrust is indeed not wanting?

It is impossible not to feel that the provisions against thrust are here literally at cross-purposes. Any thrust of an arch in a front wall would only be delivered to its proper buttress, through and across the buttress provided for the thrust on flank, and vice versa. In neither wall has the arch any true, nor any apparent and expressed relation to the buttress which is nearest to it; or, if it has any at all, it is one adverse to its stability.

The two thrusts in fact, so far as they would not counteract each other, would be resolved in the direction of the diagonal of the angle; the logical inference would require the plane of a buttress as common to both to follow this diagonal and buttresses so applied are by no means infrequent in good examples. Still it may be a question whether architecture has even yet said its last word on the most appropriate and effective treatment of them.

The spread of a buttress has a natural relation to the angle of thrust which an arch exerts, or, what is equally important, suggests to us the idea of exerting. The higher the arch relatively to its width, the more nearly will its thrust appear to approach the vertical and the more easily to be resolvable into pure down press. The more nearly then may the buttress approximate to the character of a pilaster, and dispense almost, or even entirely with successive off-sets. The very acute spire of Salisbury, and the acute windows of its tower are buttressed quite satisfactorily to the apprehension of a spectator, by the strengthened polygonal and pinnacled angles. What is required in such cases is sufficient solidity and mass of the wall at the angle to be manifestly responsible for the double pressure. This sufficiency may be emphasized by important pinnacles and by the angles of the towers being carried up as polygonal buttresses, as in the central towers of Salisbury and Canterbury. By such treatment not only are we at ease as to lateral thrusts, but the sentiment is precluded that the diagonal thrusts of internal vaulting may not be provided for.

There is a not unnatural temptation which is too often weakly yielded to, to make use of the buttress as a convenient feature, so to speak, to give variety to Gothic designs however moderate may be the size of the composition. So it is that we constantly see these cross-purpose buttresses at the angles of chancels without the slightest appearance of required responsibility for thrust. They have been seen indeed so disproportionately massive and heavy as to give the wall by contrast, an appearance of flimsiness. Nay, even advanced porches have to be put up with accessories which, if they mean anything in such a position, imply construction too faulty to be left, as construction so little adventurous should be, to its own combinations and coherence.

The motive to obtain the very utmost space for the glazed lights of cathedral aisles, had, at one period, the effect of committing the buttresses to certain incongruities. Their very considerable projection has an appearance of interfering with the light of the windows when these are brought very close up to them; and the excessive reduction of the wall deprives the window itself as seen from without, of its due support; the thrust which its arch implies to the architectural sentiment being thrown incongruously on the side of a buttress which has its office in another direction.

Arched windows involve the presumption of an arcuated and thence of a vaulted interior, which in turn demands expression on the exterior. Such a demand renders the solecism of pairs of buttresses in the planes of the walls at right angles, still more offensive. The diagonal buttress or the strengthened angle becomes imperative if the composition is to have an air of organic vigor and consistency. A glance over the collections of designs of the great cathedrals and more elaborate Gothic churches will give assurance of the force of this observation.

The implication of a vaulted interior in nave and aisles is given decisively by arched west windows and liberally expanded window-lights generally, whether with round or pointed arches. The implication is no doubt frequently unverified upon entrance, and not only aisles but naves also whether in pointed or round arch styles are found unvaulted and never to have been intended to be vaulted. This, however, does not affect the theory, unless so far as theory may protest against a false precedent being made an authority. Theory may protest still more loudly against an aggravation of offence by useless buttresses being set idly against the walls of an aisle which is roofed as a lean-to, while the compliment is not paid to critical eyes, by at least indicating a relation of the buttresses to the vault and roof of the broader nave beyond which has a conspicuous claim to more important assistance.

A high conical roof of a chapter-house, as a semi-cone covering a chancel has no right to exist unless it covers an interior vault, and the existence of such a vault seems to be bound to be acknowledged by the directions of its thrust being seen to have modified the treatment of the enclosing wall. Buttresses at these points are in their place if ever anywhere. If their places lack them and we see only an undifferentiated wall, we may fairly turn away disappointed, or even — and not inexcusably — indignant. It is much the same when buttresses appropriate in position are seen to die into a plain wall below an unaffected and unbroken parapet. We may be certain enough that they have gone on their way to fulfil their function of meeting a line of thrust, but we would fain that this should be more than matter of faith — that it should be directly expressed, frankly declared. It is here at a most important and critical point, that we suddenly lose trace of the framework and articulations of the architectural organism. A uniform roof covers a vast nave from end to end; the sublying skeleton not only does not betray its form by visible modified forms, but neither is it allowed such superficial indications as may be compared to the striping or distribution of spots which intimate on the skin of an animal, some certain differences according to the parts which it symmetrically covers.

True the mediæval architects have left us no precedents; we have to look to Classical architecture to find the interspacing of supports consistently carried up to the subdivisions of the cornice, the spacing of the antifixæ, and thence to the ordination of the tiling and finally of the ridge line. It is even here that the Gothic architect has a lesson to learn from the Classical. Let him take it to heart and the style which he loves will escape the opprobrium of advancing with unrivalled expressive sincerity up to the string-course of the parapet and there deserting him suddenly and completely. The pitch roof which descends well at the rear of a parapet, is offensive in itself and ought not to have been, ought not to be — beyond possibility of harmonized combination; a defect less important but more easily dealt with would be a certain definition on roofing and ridge line of the same lines of force which are constantly so adequately and admirably provided for and proclaimed in the strictly logically distributed buttresses.

W. WATKISS LLOYD.

COMMUNICATIONS

GENERAL MEIGS AND THE NATIONAL MUSEUM BUILDING.

July 4, 1888.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sirs. — Your Washington correspondent is not entirely informed on the history of the National Museum Building. I have not now within easy reference the papers and records in the case relating to the original conception and completion of the plans finally executed, and I do not suppose that the questions raised are of any interest to the public though they are brought before your readers in the issue of the 23d June in such a way as to unjustly reflect upon myself. I find in a pocket-diary, long kept, a note on this subject dated 18th January, 1877, that Professor Baird had called on me the previous evening and requested me to give him the

ideas derived from some experience in erection of capacious buildings and from observations of foreign museums recently made in a year abroad at his request.

That he had called at my office on the 18th January for further discussion and found me making a sketch of a building. That he requested me to give him this sketch to be placed in the hands of the architects, who subsequently on the 18th February, brought their completed plans to me with a letter from Professor Henry of the Smithsonian asking my opinion whether it could be erected for their estimate, $240,000. I went over the designs with the architect and advised the Smithsonian that I had been asked to give a sketch for a plain brick building for temporary storage of the museum collections, then greatly increased by gifts from the Centennial Exhibition then recently closed, to be without ornament and at the smallest cost. That I believed that a building of 90,000 square feet on one ground-floor, surrounded by a plain brick wall 20 feet high, enclosing another wall of piers and arches of 200 feet square, and having within it a square of 100 feet with a circle of 100 feet diameter tangent inside it; the whole roofed with wood and tin or slate, and lighted by clerestory glass at the eaves of each section of roof could be erected for $100,000 to $120,000, and that the design presented to me, as worked out from the sketch I had given Professor Baird, somewhat changed, with more elaborate subdivisions which I did not think improved it, and with a good deal of brick and some stone and metal and colored decoration could probably be put up for the architects' estimate of $240,000 including heating, water and gas pipes and drains, and a plain concrete floor over which wagons could bring into the museum the heavy exhibits. The Smithsonian adopted the plan, and while it underwent some modifications during the two or three years before the House of Representatives concurred with the Senate in making appropriation for it, it was finally built and is a satisfactory museum. Some legislators asked that it have in the principal divisions a marble and tile floor and the rest of the interior lower floor was covered with matched boards on joists let into concrete, against my advice, and these floors have of course rotted away.

I remember that Professor Baird explained to me that he had got plans for an extension of the Smithsonian Building, south, but nothing large enough for the purpose, at less than a million or more; a sum he despaired of getting Congress to vote. He said he wanted something of sufficient capacity at a cost which he could hope to secure. This has been accomplished, and more, for the building while not as imposing inside as I proposed, is more decorated both outside and inside in detail, and has a fireproof roof, which I did not propose. The *motif* of the building with me, was the Rotondo, an ancient circular church in Rome, believed to have been a Roman market; but I fixed upon a square, as wasting less of the site with the same diameter. This is the true history of the National Museum Building, a building of which none of those concerned in its erection has cause to be ashamed, and in regard to whose history and design, so far as I know, they have never had any such controversy as your article infers.

As for the other buildings with which I have had to do; they can answer for themselves. An exhaustive treatise would not change them and would not interest your readers; nobody cares who designed or built them. Turkeys, chickens and ducks never live in harmony, and civil engineers and architects employed or not employed by this Goverment are not likely to be content that a few out of the thousands of public and private works and buildings of the country are committed to the Supervising Architect of the Treasury and to the United States Corps of Military and Civil Engineers. The other side is careful to sink the title of *Civil* and to insist upon designating them as *Military* engineers, availing themselves for this purpose of the fact that the two original corps existing before the war were from military necessity consolidated into one during its progress, and that then there was no time or money for the Government or this Corps to devote to civil constructions or architecture. Purely civil practitioners of engineering and architecture have monopoly of all the railroads, canals, city-halls, courts, warehouses, theatres, stores, hotels, shops, mansions, dwellings, streets, roads, dikes, dams, mills, factories, etc., on which they spend more millions yearly in a single city, like New York, Boston, Philadelphia, Baltimore, Chicago, Omaha, Kansas City, St. Louis, and half a dozen others which might be named, than the engineers and architects of the United States service, do on the whole continent in the same time. But still the constitutional grumblers continue and will continue their attacks, on those so unfortunate as to be in Public Service, just so long as the quarrel between geese and turkey, ducks and chickens is not finally settled.

M. C. Meigs.

Notes and Clippings

A Village on the White Sea destroyed by Ice. — Advices from the fishing village of Kerschkaranza, in Kola, a peninsula on the White Sea, describe a wonderful phenomenon, new in Arctic annals, which took place on January 5th last. At 4 o'clock in the morning the inhabitants were awakened by a series of heavy, dull detonations, like heavy artillery. Shortly afterward a great ice wall to the Northwest, several hundred feet high, was seen to be moving toward the village, doubtless in consequence of the pressure of the ocean of ice outside. The ice hills came slowly but irresistibly onward, and passed over the village, which they completely erased, and kept onward for a mile inland. The ice travelled a mile and a half in four hours. The villagers saved their lives, but little else. — *Philadelphia Press.*

A Large Clock. — A new clock weighing 2 1-2 tons has just been placed in the tower of the Glasgow University, similar to the great clock at Westminister. The frame of the clock newly erected is horizontal and of cast-iron planed. It is 6 1-2 feet long, 2 feet wide, and 1 1-2 feet in depth. It is supported on beams built into the wall of the tower, so as to obviate vibration. The wheels, which are of gun-metal, can be moved separately, as the pivot holes are screwed to the frame. The main wheels of the striking and quarter trains are 20 inches in diameter, and attached to them are cams to lift the hammers, which are fixed in iron frames connected with the clock by cranks, and having a check spring to prevent vibration. The weight of the hammer that strikes the hour is 120 pounds and it is lifted 10 inches. There is an automatic apparatus attached to the clock, which stops the quarter peals at night, and starts them in the morning. The escapement of the going part is known as the double three-legged gravity, invented by Lord Grimthorpe. The pendulum is of zinc and iron to counteract influences of temperature. The tubes are arranged so that the expansion of one raises the centre of gravity while that of the other lowers it. The bob of the pendulum is cylindrical, and weighs 3 cwt., and the beat is 1 1-2 sec. The "bolt and shutter" appliance of the nobleman already named, maintains the motion while the clock is being wound. Messrs. J. B. Joyce & Co., Whitechurch, Shropshire, manufactured the clock. — *Engineering.*

Trade Surveys

Trade statistics, whether commercial, manufacturing or financial, present very little that is deserving of notice. Financiers are keeping a sharp eye on all markets, and especially all markets for bonds and securities. Banking interests are not satisfied with the restricted volume of business and low rates ruling. The Commercial Agency reports are written in a spirit of cheerfulness and hopefulness. Private circulars of money lenders and business houses breathe a spirit of confidence in better conditions in the near future. This confidence seems well grounded, but no sudden and widespread activity is probable. The conservative managment that has prevailed will continue. The restriction of production will be kept up until demand proves itself strong enough to absorb more. Prices need not improve to bring this about, and probably will not on account of the enormous waiting capacity. The word of money lenders as to the coming activity is not always reliable, but at present, facts and conditions warrant the views they entertain and express. Building has not been as backward as was supposed. The West has forged ahead. Reports this week from Chicago, St. Paul, Duluth and Omaha in the Northwest, and from Little Rock, Memphis, and some few interior towns in the West and Southwest show, as judged by the absorption of iron, steel, lumber and brick, as heavy constructions as last year. The work is different in many respects from last year. Extensions and improvements take a great deal more material this year. The firmness of prices in a l or nearly all material show that building has been active. The saw and planing mills have not been obliged to stop. Our advices show that with few exceptions, lumber, doors, sash, etc., are in active demand. It is true stocks are large, but the industry is under control of combinations. The price combination on sash, doors and blinds failed recently, not because of enormous stocks, but because members wanted to be at liberty to cut prices for the fall trade if they want to. Chicago is using up more lumber this year than last. The country trade is absorbing more. Michigan manufacturers assert they have sold more lumber this year to go East than ever before; yellow-pine manufacturers certainly have. The use of iron has been almost as heavy as if we eliminate the decreased railroad consumption. The structural mills are as busy. All the brick-makers west of the mountains are as busy. Small machinery makers turned out as much machinery for this half year as last. Car-building is now falling off; but boat and ship building is coming up. All the yards on the Delaware are crowded. The Pacific Coast yards are busy. Lake-craft builders have a full season's work on hand. Water-way competition is steadily increasing, and it is giving the railroad companies lots of trouble, along with the "Soo" tiger that is creating distress among the trunk lines. As fast as older channels of activity become gorged with producing and distributing facilities, just so fast does enterprise break over the bank and dig new channels. Our experience shows that there is no definable limit to the new channels that can be opened. The past twelve months have shown that comparatively unknown industries can be established and built up. The younger men connected with manufacturing interests are making strides that reveal to the older heads that we are but in the infancy of our development. The larger engine, boiler and general machinery makers are now contracting for a great deal of fall and winter work. In fact a substitution of improved machinery is taking place everywhere on account of the competition at work. Margins are narrow everywhere, and a machine that will do more or better work, and use less coal, drives, or threatens to drive those out who do not get the best types and products of mechanical ingenuity: hence much of the visible activity in our machine-shops is not altogether due to an actual expansion of capacity, but to the necessity for providing better machinery to do the work now at our doors. The iron-makers will probably resume work late this month. The coal-producers are mining and selling more coal than last year. The anthracite coal region is four days ahead of last year. Hardware, especially for building purposes, is in active demand. Wagon and carriage makers have as many men employed as three months ago. The textile industry is as it has been for three months — busy in cotton, dull in wool. Boot and shoe manufacturers are maintaining last year's record. There is no pronounced weakness anywhere, but the volume of business for the first six months of the year, according to clearing-house exchanges, show a decline of a trifle under 10 per cent as against first six months last year. There is an easier feeling in industrial circles over the practical postponement of the tariff agitation until next winter. Industrial managers believe that the square presentation of the issue of high or low duties will result in a verdict in favor of high duties.

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